DERWENT-WEEK: 199711

TITLE: CAP formulated with solid Pz and IM

PATENT-ASSIGNEE: ANONYMOUS[ANON]

PRIORITY-DATA: 1996RD-0393040 (December 20, 1996)

PATENT-FAMILY:

PUB-NO	PUB-DATE	LANGUAGE	PAGES	MAIN-IPC
RD 393040 A	January 10, 1997	N/A	001	C08K 000/00

APPLICATION-DATA:

PUB-NO	APPL-DESCRIPTOR	APPL-NO	APPL-DATE
RD 393040A	N/A	1996RD-0393040	December 20, 1996

INT-CL (IPC): C08K000/00

ABSTRACTED-PUB-NO: RD 393040A

BASIC-ABSTRACT:

In general terms, the concept to be disclosed is the formulation of cellulose acetate propionate or cellulose acetate butyrate with solid plasticisers and impact modifiers in order to achieve superior combinations of stiffness and impact strength. The effect of solid plasticisers on the stiffness of cellulose esters is documented in open literature but the use of impact modifiers and solid plasticisers together with cellulose esters is new. The experimental work was performed with cellulose acetate propionate but can be readily extended to cellulose acetate butyrate. It cannot be extended to cellulose acetate because of its incompatibility with solid plasticisers. The solid plasticisers which were evaluated in this project included glycerol tribenzoate, sucrose benzoate, neopentylglycol dibenzoate, 1,4-cyclohexane dimethanol dibenzoate, o,p-toluenesulphonamide, dicyclohexylphthalate. Other solid plasticisers, such as pentaerythritol tetrabenzoate or hydroquinone bis(diphenyl phosphate) are also likely to be suitable for these formulations. The plasticisers useful in these formulations can be broadly described as having two characteristics. (1) They are compatible with the cellulose ester from about 5 wt.% to about 25 wt.% and (2) they are solids at room temp. The two impact modifiers which were evaluated can be described as core-shell impact modifiers and have the trade names Paraloid KM-323-B and Paraloid KM-334. These two impact modifiers were tested at levels as high as 5 wt.% but the benefit from them was continuing at levels as high as 5 wt.% but the benefit from them was continuing to increase therefore levels as high as 10 wt.% may be reasonable. It is likely that other classes of impact modifiers such as natural or synthetic rubbers would also work. Examples of these classes of materials would be butadiene-styrene copolymer elastomers, siloxane elastomers and nitrile rubbers. The flexural moduli of these formulations range from about 1800 MPa to 2400 MPa as compared to a range from 1300 MPa to 1800 MPa for a cellulose acetate propionate formulated with liq. plasticiser.The inclusion of core-shell impact modifier in the formulation of cellulose acetate propionate and solid plasticiser raised the impact strength. Without impact modifier the notched Izod impact strength at 23 deg. C fell in the range from 50 J/M to 80 J/M. When the formulation included impact modifier, the notched

Izod impact strength at 23 deg. C fell in the range from 140 J/M to 200 J/M. It is possible that the advantages of cellulose esters formulated with solid plasticisers and impact modifiers may still be seen if low levels of conventional plasticisers were present. We did not test formulations which included the combination of liq. plasticisers with solid plasticisers. The benefit of the solid plasticiser is almost certain to be lost if the liq. plasticiser is present in the formulation at 10 wt.% or higher and is likely to be lost even at levels of 5 wt.% or higher. However, the inclusion of 2 wt.% or so might provide improved processability.